

sign to try and accommodate the unknown future requirements of the financial industry.

While we recognize that we could not have covered all possibilities, we believe that we have significantly hedged our future needs.

The model described here has been implemented, to varying degrees, in both 5 Smalltalk and Java. Both implementations are in production in the JP Morgan Fixed Income systems group. We believe that this model has significantly improved the ability of the systems teams to manage and exploit the explosive growth in the Fixed Income business.

By the end of 1998, this model will be used to represent, process and store all 10 financial trades, both simple and exotic, for the global JP Morgan Fixed Income business.

It is apparent from the foregoing that a new system has been developed that accomplishes the stated objects of the invention. While the presently existing embodiment and certain variations thereon have been described in detail, it will be apparent to those skilled in the art that the principles of the invention are readily adaptable to other adaptations and configurations of the systems described herein without departing from the 15 scope and spirit of the invention, as defined in the following claims.

  We claim:

 1. A system comprising means for processing financial data, wherein a declarative 2 specification language is employed in the programming of such system in order to 3 describe financial instruments.

1. 2. The system of claim 1, wherein said language uses a set of basic building blocks 2 known as "financial event templates".

1       3. The system of claim 2, wherein each financial event template represents one basic  
2       financial element and also represents all the state information associated with such  
3       financial element.

1       4. The system of claim 2, wherein a particular declarative specification represents a spe-  
2       cific type of financial instrument by specifying how the financial component specifi-  
3       cations relate to each other to describe such financial instrument.

1       5. The system of claim 4, wherein said declarative specification represents the  
2       "commercial terms" (the set of state information necessary to represent all of the fi-  
3       nancially relevant data for the given instrument) of such type of financial instrument.

1       6. The system of claim 2, wherein parameterization of a declarative specification repre-  
2       sents one instance of the type of financial instrument defined by the specification, and  
3       further wherein such combination of the declarative specification and parameters de-  
4       fines the static representation of the instance of such financial instrument.

1       7. A process implemented within means for processing financial data that transforms  
2       static representation of a financial instrument as created in accordance with claim 6  
3       into a timeline of inter-related event objects that is specific to the given static repre-  
4       sentation.

1       8. The process of claim 7, wherein said timeline of inter-related event objects is com-  
2       posed of basic financial building blocks, known as "financial events or components",  
3       and constitutes in its entirety the financial event structure or macro structure of that  
4       particular financial instrument.

1 9. A process as described in claim 7, wherein the financial event structure of an instance  
2 of a financial instrument can always be exactly reproduced by the process defined in  
3 claim 7, given the static representation of said financial instrument.

1 10. A process implemented within means for processing financial data wherein either the  
2 static representation of a financial instrument in accordance with claim 6 or the finan-  
3 cial event structure of a financial instrument in accordance with claim 7 can be made  
4 persistent or distributed over a network.

1 11. A system comprising data processing means wherein a generic traversal process is  
2 employed that can be applied to the macro structure of a financial instrument to im-  
3 plement one or more functions that produce results based on this information.

1 12. The system of claim 11, wherein each said function is implemented as a specific ex-  
2 tension of said generic traversal process to generate a specified type of result.

1 13. The system of claim 12, wherein each traversal process is based on a well defined  
2 interface between the financial events contained in the financial event structure of a  
3 financial instrument and said traversal process.

1 14. The system of claim 13, wherein the action to be performed for each type of financial  
2 event is defined, in said specific traversal process, independently from the action for  
3 any other type of financial event.

1 15. The system of claim 14, wherein the overall result of applying a function specific tra-  
2 versal process to the financial event structure of a financial instrument is a combina-  
3 tion of applying all individual financial actions to the respective financial events in a  
4 prescribed way.

1 16. The system of claim 11, wherein said traversal process is implemented via a double  
2 dispatch mechanism.

1 17. The system of claim 16, wherein said double dispatch mechanism selects the appropriate action for each financial event without predetermined knowledge of the overall referential structure of the financial event structure.

1 18. The system of claim 16, wherein a nested double dispatch mechanism initiated inside  
2 the action for a given financial event can select the appropriate action for any financial event referred to locally within the financial event.

1 19. The system of claim 18 wherein said nested double dispatch mechanism can be applied recursively to any level.